

**US OIL RECOVERY SUPERFUND SITE
WORK PLAN REFINEMENT/MODIFICATION NOTICE**

REFERENCE DOCUMENTS: Remedial Investigation/Feasibility Study (RI/FS) Work Plan, Sampling and Analysis Plan Volume I Field Sampling Plan (FSP), Sampling and Analysis Plan Volume II Quality Assurance Project Plan (QAPP) (all dated December 23, 2015)

WORKPLAN REFINEMENT/MODIFICATION NOTICE NO.: AO1-1-5

DATE: June 9, 2017

DESCRIPTION OF REFINEMENT/MODIFICATION:

The RI/FS Work Plan provided preliminary locations for off-property soil samples and on-property groundwater monitoring wells (Figure 9 of the RI/FS Work Plan). This Work Plan Refinement Notice (WRN) proposes: 1) minor adjustment of four previously proposed on-property monitoring well locations; 2) addition of three on-property monitoring well locations; 3) minor adjustment of two previously proposed off-property soil sample locations; 4) addition of two new off-property soil sample locations; and 5) collection of soil samples for potential fate and transport parameters at three proposed monitoring well locations. The proposed revisions are based on data and observations collected at the site to date and input from EPA.

On-Property Monitoring Wells

Based on soil sample concentration data for chemicals of potential concern (COPC) and observations collected to date, the locations of the following four monitoring well locations are proposed to be adjusted from the locations proposed in the RI/FS Work Plan (Figure 1). Specifically:

- MW-1 is proposed to be moved to the southwestern-most corner of the Site, outside of the projected historic burial pit boundary, to be upgradient of potential on-site source areas in the main operational area and the possible historic burial pit area;
- MW-6 is proposed to be moved approximately 90 feet to the northeast of the original location to evaluate potential groundwater issues related to soils in the Former Tank Farm area;
- MW-7 is proposed to be moved approximately 75 feet northwest of its original location proposed in the RI/FS Work Plan to adjust the monitoring well spacing, to evaluate potential groundwater impacts of metal, pesticide and herbicide, volatile organic compound (VOC), semi-volatile organic compound (SVOC), and total petroleum hydrocarbon (TPH) concentrations that exceeded soil preliminary screening values (PSVs) in soil samples collected in the area (e.g., soil boring SB-37), and to evaluate potential impacts from the former sludge bed;
- MW-8 is proposed to be moved approximately 50 feet northeast of its original location proposed in the RI/FS Work Plan to adjust monitoring well spacing and to evaluate potential groundwater impacts of metal, pesticide and herbicide, VOC, SVOC, and TPH concentrations that exceeded soil PSVs in soil samples collected in the area (e.g., soil borings SB-34, SB-35, and SB-36).

In addition, MW-11 may be re-located slightly due to the presence of equipment in the area and/or to avoid a pipeline located near the original proposed location. If the monitoring well is re-located, best efforts will be made to keep the location near the original location and within the former bioreactor release area shown on Figure 1.

The monitoring well locations are shown on Figure 1.

Three additional monitoring wells are proposed to evaluate potential groundwater impacts in source areas, based on data collected to date. Specifically:

- MW-12 is proposed to evaluate potential groundwater impacts of metal, pesticide and herbicide, VOC, SVOC, and TPH concentrations that exceeded soil PSVs in soil samples collected in the area (e.g., soil borings SB-30 and SB-89);
- MW-13 is proposed to evaluate potential groundwater impacts of VOC concentrations that exceeded soil PSVs in soil samples collected in the area (e.g., soil borings SB- 17 and SB-85); and
- MW-14 is proposed to evaluate potential groundwater impacts from the possible historic burial pit, which has been identified with impacts of metal, pesticide and herbicide, VOC, SVOC, and TPH concentrations that exceeded soil PSVs in soil samples collected in the area (e.g., soil borings SB-2 and SB-3).

These proposed additional monitoring well locations are shown on Figure 1. No changes to the original groundwater analyte list are proposed.

Off-Property Soil Boring Locations

To investigate concentrations of metal, pesticide and herbicide, VOC, SVOC, and TPH that exceeded soil PSVs in soil samples collected at the northeast slope area immediately outside the property boundary, two additional source area soil borings, SB-109 and SB-110, are proposed (Figure 1). In addition, two soil borings at the southern property boundary, SB-69 and SB-70, are proposed to be moved slightly to the north to avoid significant pipeline easements at the originally proposed locations. These additional proposed borings and adjusted boring locations are shown on Figure 1.

Potential Fate and Transport Soil Sampling

As stated in the RI/FS work plan, representative samples will be collected to evaluate fate and transport characteristics for COPCs in soil. Fate and transport samples are proposed to be collected during the on-property monitoring well installation. Three geotechnical samples will be collected in a two-foot interval within five feet above the depth to saturation at the following wells:

- MW-7;
- MW-12; and
- MW-14


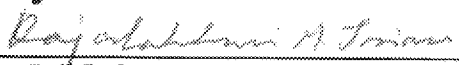
Geotechnical samples will be analyzed for bulk density, total organic carbon, fraction organic carbon, moisture content, grain size, permeability, porosity, and hydraulic conductivity.

In addition, one soil sample will be collected from the 0-0.5 foot bgs interval at each of the above locations proposed for fate and transport sampling and analyzed for soil pH, total organic carbon and grain size.

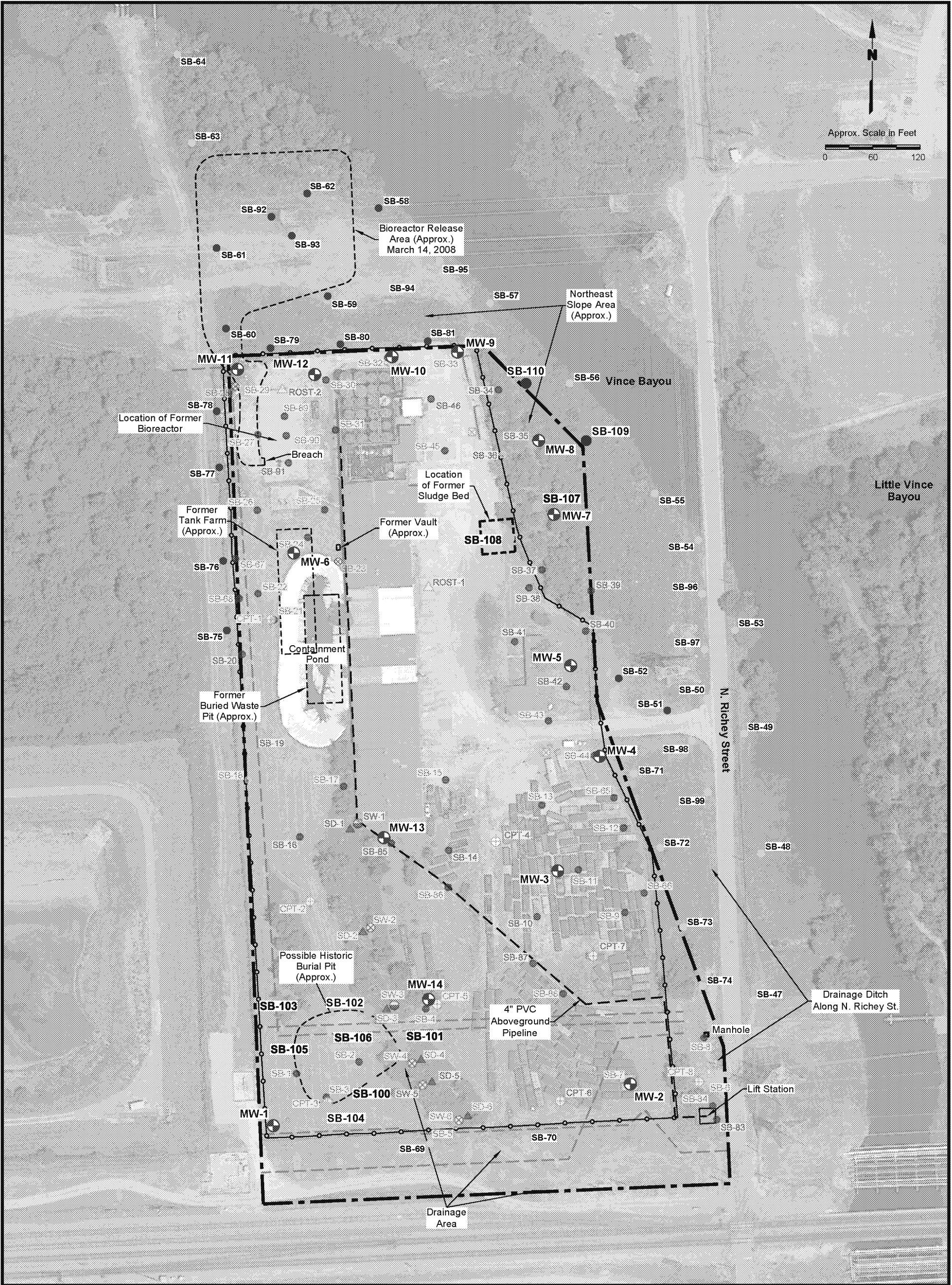
RATIONALE FOR REFINEMENT/MODIFICATION:

Four monitoring well locations are proposed to be adjusted based on soil data collected to date to better evaluate potential groundwater impacts related to potential source areas and to establish a well upgradient of the main operational and historic burial pit areas. Three additional monitoring wells are also proposed based on soil data and field observations to evaluate groundwater impacts from potential source areas.

Two additional off-property soil borings are proposed to evaluate impacts in the northeast slope area indicated by soil data collected to date in the same area. In addition, two off-property borings are proposed to be moved slightly to the north to avoid significant pipeline easements at the originally-proposed locations. Potential fate and transport parameter soil samples are proposed to be collected to evaluate fate and transport characteristics for COPCs in soil.

Respondents' Project Coordinator:		Date:	<u>6/16/17</u>
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	Raji Josiam		

FIGURE



EXPLANATION

- | | | | |
|-------|---|---|---|
| --- | Approx. Property Boundary | ● | Proposed Monitoring Well Location |
| —○— | Approx. Security Fence | ⊕ | CPT Location |
| ~~~~~ | Approx. Pipeline Location | △ | CPT/ROST Location |
| ● | Soil Boring Location per RI/FS Work Plan (Source Areas/Industrial Activities) | ⊗ | CPT Location - Eliminated due to Underground Obstruction |
| ● | Soil Boring Location per RI/FS Work Plan (Drainage Areas) | ⊗ | Soil Boring Location - Eliminated due to Underground Obstruction or Presence of Equipment |
| ● | Surface Water Sample Location | ● | Proposed Soil Boring Location (WRN-4) |
| ⊗ | Surface Water Sample Location - Not Collected due to absence of Surface Water | ● | Proposed Soil Boring Location (WRN-5) |
| ▲ | Sediment Sample Location | | |

Notes:
1. Proposed locations are approximate and subject to change.
2. Highlighted sample locations have been completed.

US OIL RECOVERY SUPERFUND SITE
PASADENA, HARRIS COUNTY, TEXAS

Figure 1

PROPOSED SAMPLE LOCATION AND MONITORING WELL LOCATION MAP

PROJECT: 3333	BY: AJD	REVISIONS
DATE: JUNE, 2017	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS